



MACHINES

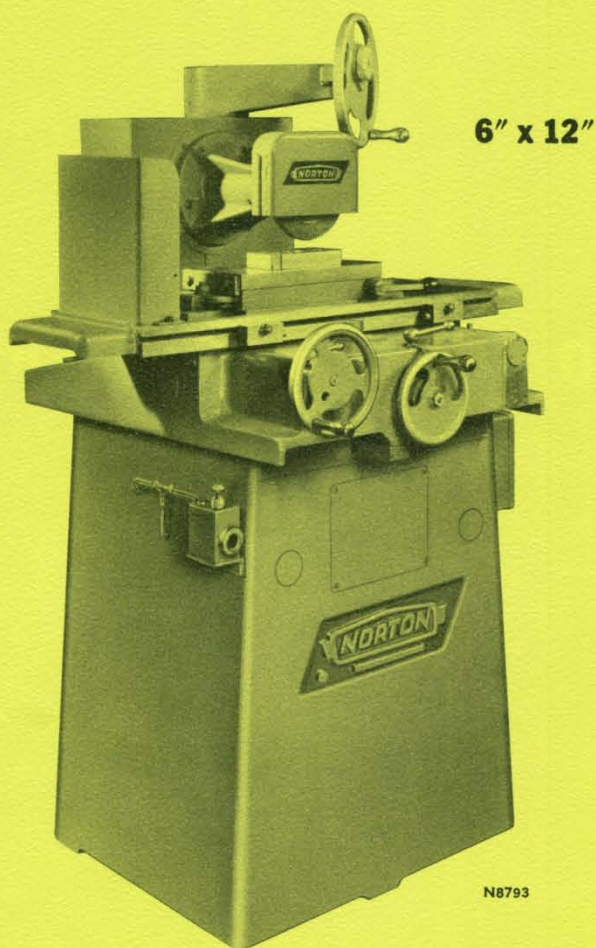
TYPE TS-2

HAND SURFACE GRINDERS

6" x 12"
10" x 16"



Catalog No. 388-3

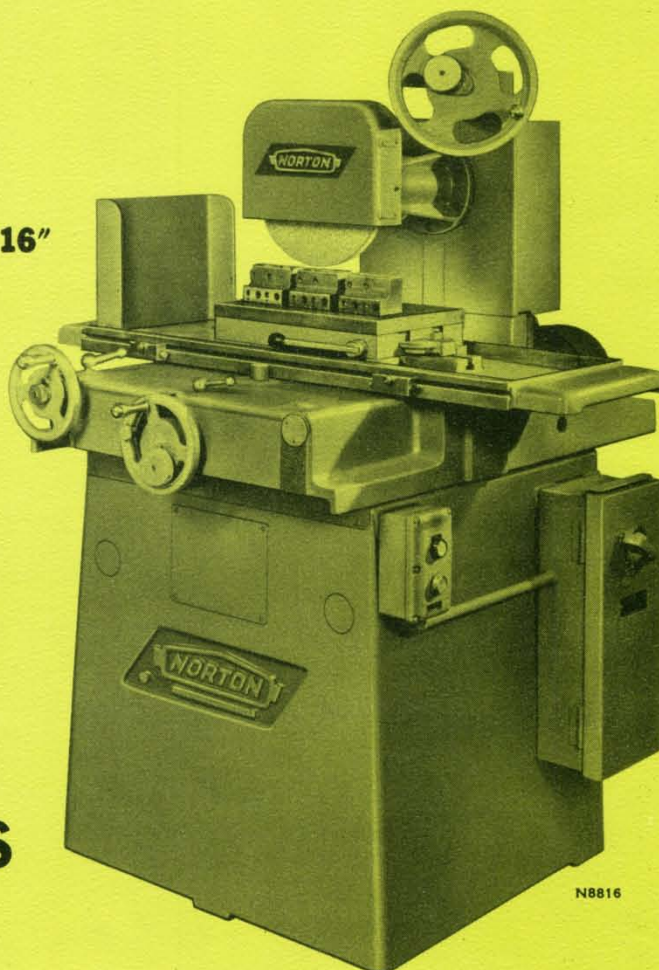


6" x 12"

N8793

NORTON TYPE TS-2 HAND SURFACE GRINDERS

10" x 16"



N8816

**RUGGED
CAST IRON BASES
PROVIDE A STURDY
PLATFORM FOR
SUPPORT OF THE
SLIDING COMPONENTS**

EASY • ACCURATE • ENDURING

Like all Norton Grinders — from highly complicated automatic production machines to simpler tool room types — the new Type TS-2 Hand Surface Grinders have the common denominator of easy operation, precision performance and long service life.

Extra smooth and easy operation — an important quality in hand-driven machines — is a noticeable advantage of the Type TS-2. In addition, they provide features assuring high investment return, through precise functioning over a long service life.

Heavy wheel heads with long ways — a basic value in Norton Surface Grinder design — eliminate wheel head "hang-up" and in combination with rugged center-guided saddles on widely spaced ways, greatly fortify general grinding capability, and the retention of accuracy.

These new TS-2 Surface Grinders can make profitable contribution to your Tool Room capacities — or handle with a continuing efficiency — other work that is suitable to machines of their type.

*A measure of grinding machine value
is the background of its maker.*

TYPE TS-2 FEATURES GIVE YOU OVERALL ADVANTAGES

Two-speed wheel feed facilitates sizing. The large hand wheel for rapid feeding is graduated .0005", and gives .050" feed at one full turn. For fine-increment feeds, there is a reduction geared mechanism operated by a large knurled knob. Fine feeds are read on a vernier scale graduated .0001".

1

Sturdy housing supports the antifriction bearing spindle right to the end; contributes to sustained grinding accuracy.

2

Fast wheel change. A hinged guard is merely swung back for wheel change.

3

Long wheel head ways assure precise feed motion; prevent wheel head "hang-up", and also provide large wear-resistant areas which prolong accuracy of TS-2 feed.

4

Friction-brake on table (and on cross slide) permits setting a "drag" or locking, if desired.

5

The table drive hand wheel may be readily oriented to position the handle for the most convenient short-stroke operation.

6

Easy cross feeding through long-bearing base ways and well balanced saddle. The hand wheel has calibrations of .001". It gives 0.2" cross feed for one turn. On the 10" Type TS-2, the hand wheel has a knob-operated fine-feed mechanism and a vernier scale to read these feeds in increments of .0005".

7

Rapid grinding of square and parallel shoulders is made easy by a saddle guide-rail which keeps cross movement accurate.

8

Fatigue-free hand table drive. Antifriction elements under table produce a fluid motion; reduce effort.

9

Strong workpiece support for grinding is provided by a long saddle designed to overcome any tendency of "rocking".

10

Wheel drive motor start-stop control is mounted for easy accessibility from the operating position.

11

Extra-rigid, cast-iron base is compactly proportioned to allow close approach for operating ease.

12

Single speed vee belt arrangement drives the 7" diameter grinding wheel on the 6" x 12" Type TS-2.

Two-speed wheel drive by belt change on the 10" x 16" Type TS-2 promotes full use of 12" diameter wheels.



TYPE

TS-2

GIVES

BETTER

GRINDS

EASIER

PRECISION

Down-feed

Easy, fine increment down feeding is done by reading a vernier scale on hand wheel. The regular hand wheel is calibrated .0005" for fast, coarse positioning; the vernier scale .0001" for fine feeding which is done by a large, knurled knob.

Heavy wheel head with long ways

Promotes faster, better grinding by eliminating wheel head "hang-up" tendencies.

Bevel gears

Give positive, high reduction feed.

Tracking by saddle guide-rail

Assures production of parallel and square surfaces, fast.

Rugged wheel spindle housing

Aids rapid, accurate grinding; supports antifriction bearing spindle right to the end.

EASE

Easy Saddle Operation

Easy, extremely smooth operation of saddle in cross feeding, minimizes operating effort. The quality of grind is also helped by smooth movement of this component. Saddle Ways are lubricated by a one-shot system.

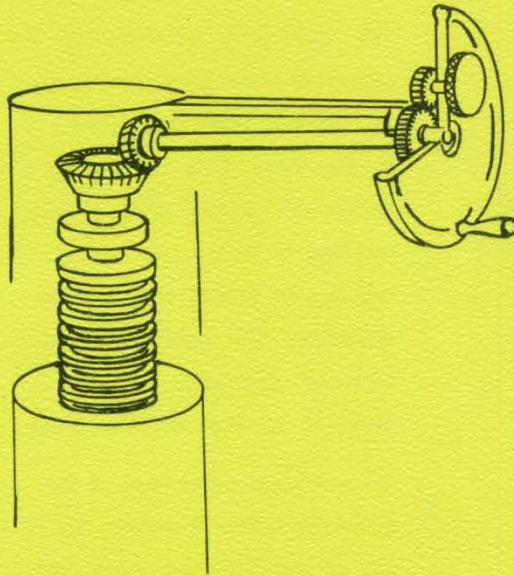
Fatigue-free table drive

Antifriction elements on ways, provide unusually fatigue-free table drive.

No bending to operate controls

Preserves operator energy.

TYPE TS-2 FEATURES SUSTAIN PRECISION



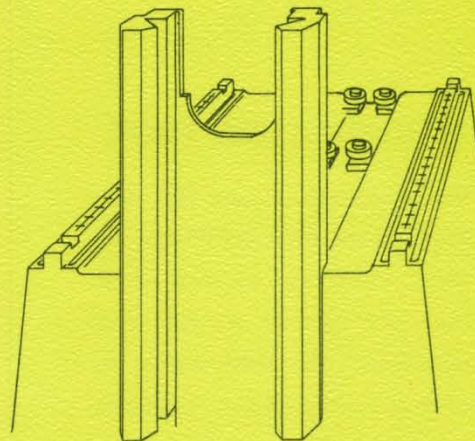
FEEDING ACCURACY

The Type TS-2 has a wheel feed mechanism that is lastingly accurate. The service life of this unit is promoted by a large feed screw turning in a full-nut.

For feeding efficiency, the feed wheel is calibrated in increments of .0005". For fine-feeding or for finishing passes, there is a micrometer feed mechanism with reduction gearing calibrated in increments of .0001".

LONG WHEEL HEAD GUIDE WAYS

Long wheel head guide-ways ribbed for extra strength, are a special precision-preserving feature of the Type TS-2 design. They contribute greatly to a sustained accuracy in down-feed by distributing the load over a wide area. Of equal importance, they also tend to prevent wheel head "cocking" under the heavier feeds.



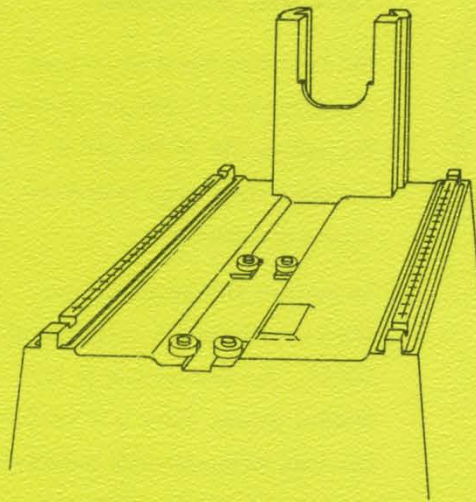
SE-4066-C

TYPE TS-2 FEATURES SUSTAIN PRECISION

SADDLE GUIDE-RAIL

This guide-rail, attached to the underside of the saddle, produces an excellent cross feed action in the Type TS-2. It assures straighter "tracking" of the saddle, resulting in better and faster grinding of square and parallel shoulders. The guide-rail runs between antifriction rollers attached to the machine base.

An additional advantage of the guide-rail is that it permits the use of two flat cross ways, thus eliminating the possibility of ways "quarrel".



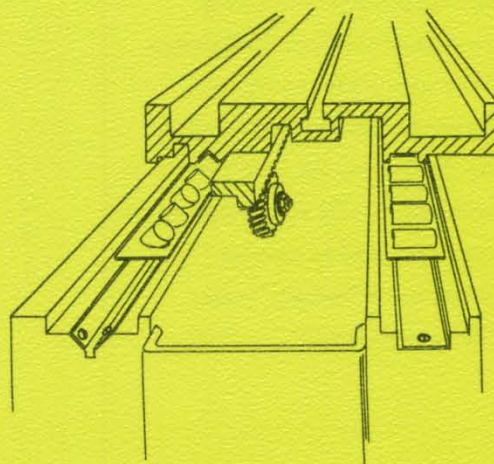
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TYPE TS-2 FEATURES EASE OPERATION

SMOOTH TABLE DRIVE

The smoothness of Type TS-2 table drive, comes from antifriction elements which run on steel strips. They are held in phenolic resin separators. The fluid motion reduces operating effort to a minimum.

The illustration shows how an effective means of directional control is obtained by "staggering" the forward set of antifriction elements. It also shows the rack and pinion drive, and the sturdy table.



SE 4075-E

LONG LIFE

Long wheel head vertical ways

Long wheel head vertical ways extend service life, in addition to facilitating accuracy. These large areas offer a high measure of wear-resistance, thus permit heavy machine use without sacrifice of the precision capability.

Large, cast iron saddle

The large, cast iron saddle, moving on widely spaced ways, eliminates tendencies toward "rocking", and provides rigid work support for enduringly precise grinding.

Rugged cast iron base

The strong, cast iron base is proportioned to completely absorb grinding stresses, and for generous back-up of heavy sliding components.

Well guarded machine

The Type TS-2 is well guarded to assist extension of service life by minimizing infiltration of grit into critical areas.

VERSATILITY

Large vertical capacity

Maximum height capacity of 12½" on 6", and 12" on 10" TS-2, from table top to bottom of the standard grinding wheel gives wide job range use.

Left or right-hand mounting of table drive hand wheel

The table drive hand wheel may be purchased in either the left- or right-hand position on the base, thus assuring most convenient operation. If definite specification for right-hand drive is not made, the left-hand drive is furnished.



TYPE

TS-2

DURABILITY

VERSATILITY

EQUIPMENT INCLUDED IN MACHINE PRICE

6" x 12" Type TS-2

Hand table traverse
Hand cross feed
Cartridge type, antifriction
bearing wheel spindle
Vee belt drive — single speed
Hinged wheel guard
Wheel sleeve
Fine-increment down-feed
Diamond tool holder
Protection guards and wrenches
Two 7" x 3/4" x 1 1/4"
grinding wheels
Wheel drive motor — 1 h.p.,
3600 r.p.m., A.C., totally
enclosed, ball bearing,
with control

10" x 16" Type TS-2

Hand table traverse
Hand cross feed with fine
increment mechanism for
.0005" increments of
cross feed
Antifriction bearing wheel spindle
Vee belt drive — two speed
by belt change
Hinged wheel guard
Wheel sleeve
Diamond tool holder
Fine-increment down-feed
Protection guards and wrenches
Two 12" x 3/4" x 3" grinding
wheels
Wheel drive motor — 1 1/2 h.p.,
3600 r.p.m., A.C., totally
enclosed, ball bearing,
with control

Type TS-2 Grinders are arranged to Commercial Electric Standards. Arrangements to J. I. C., or to N. M. T. B. A. Standards are available at extra cost.

AUXILIARY EQUIPMENT AT EXTRA COST

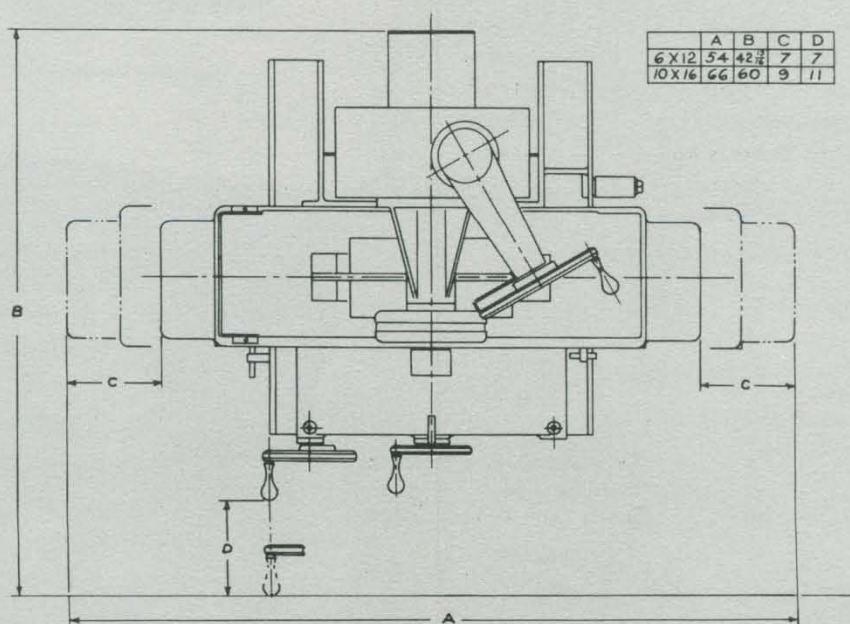
#612 Permanent Magnetic Type Chuck
#613 Standard Electromagnetic Type Chuck
#613 Longitudinal Bar Pole Type Chuck
#613 Transverse Bar Pole Type Chuck
#1015 Permanent Magnetic Type Chuck
#1015 Standard Electromagnetic Type Chuck
#1015 Longitudinal Bar Pole Type Chuck
#1015 Transverse Bar Pole Type Chuck

Manual Chuck Control Switches
Electro-Magnetic Neutrofier with
Remote Control
Wet Grinding Arrangement
Coolant-through-the-Grinding
Wheel Arrangement
Mist-Type Coolant Arrangement
Dust Exhaust Equipment
Special Wheel Truing and
Forming Equipment
Vises
Receptacle for Plug-in Service

SPECIFICATIONS

	6" x 12"	10" x 16"
Working surface of table.....	6" x 12"	10" x 16"
Longitudinal table travel.....	14"	18"
Cross traverse.....	7"	11"
Grinding wheel.....	7" x 3/4" x 1 1/4"	12" x 3/4" x 3"
Capacity — table top to bottom of full size grinding wheel.....	12 1/2"	12"
Wheel feed hand wheel — increments of graduation.....	.0005"	.0005"
vernier scale, graduations.....	.0001"	.0001"
Cross feed hand wheel increments of graduation.....	.001"	.001"
Vernier scale (10" only).....	—	.0005"
Table drive.....	hand	hand
Table ways.....	vee and flat, with rollers	
Cross slide ways.....	two flat ways	
Wheel drive motor.....	1 h.p.	1 1/2 h.p.
Tee slots in table.....	1	3
Net weight, pounds.....	1400	1925

Floor Plan



Composite Floor Plan

The descriptions, illustrations and specifications in this booklet are correct at the time of printing. Machines built at later dates may differ in detail due to the policy of Norton Company to improve its machines constantly.



MACHINE TOOLS

for
**Grinding
and
Lapping**

MACHINES FOR

- CYLINDRICAL GRINDING
- SURFACE GRINDING
- UNIVERSAL GRINDING
- SPECIALIZED GRINDING
- ROLL GRINDING
- CAM AND SHAPE GRINDING
- CYLINDRICAL AND FLAT LAPPING
- CENTERLESS GRINDING
- AUTOMATIC GRINDING AND LAPPING
- UNIVERSAL TOOL AND CUTTER GRINDING
- CRANKPIN AND CRANKSHAFT BEARING GRINDING
- ATTACHMENTS AND EQUIPMENT FOR SPECIAL WORK

MACHINE DIVISION OFFICES

Telephone Numbers

WORCESTER 01606 — New Bond Street	798-2511
HARTFORD 06103 — 15 Lewis Street	525-8343
CLEVELAND 44103 — 1306 East 55 Street	431-9500
DETROIT 48208 — 5805 Lincoln Avenue	872-8300
CHICAGO 60632 — 4737 So. Christiana Avenue	523-8700
NEW YORK 10017 — 100 East 42 Street	697-2650
LOS ANGELES 90022 — 3200 So. Garfield Ave.	723-7111

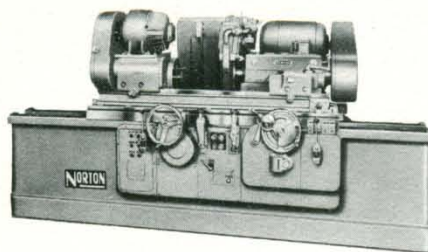
Distributors in all principal industrial areas

**OTHER NORTON
PRODUCTS**

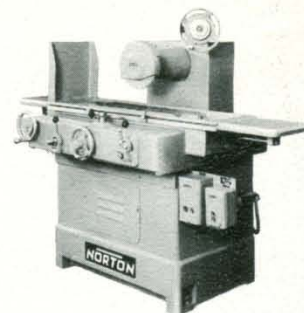
SHAPERS AND GEAR CUTTING MACHINES
ENCAPSULATING MACHINES
SEMI CONDUCTOR PROCESSING EQUIPMENT
ABRASIVES
GRINDING WHEELS
REFRATORIES
NON-SLIP FLOORS
COATED ABRASIVES
PRESSURE SENSITIVE TAPES
SHARPENING STONES
VACUUM EQUIPMENT
TANTALUM

For complete line of Norton Grinding and Lapping Machines, write for Catalog 1843.

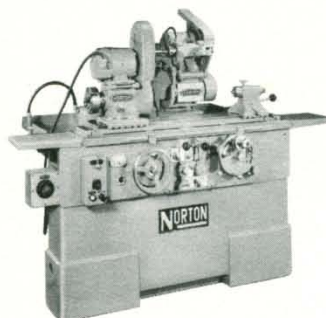
For complete line of Norton Shapers and Gear Cutting Machines, write for Catalog 426.



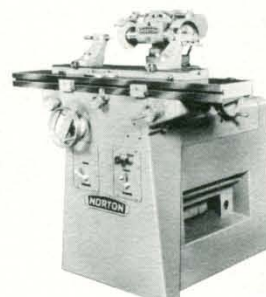
Cylindrical Grinders



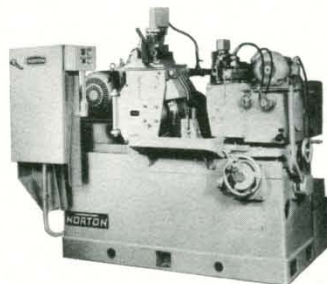
Surface Grinders



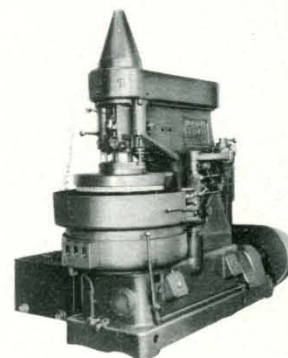
Universal Grinders



Cutter and Tool Grinders



Centerless Grinders



Lapping Machines

For factory direct parts and service please contact us at the address below.

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